Scope and Methodology

Consumer Survey

To provide information on the impact of the availability of cable modem Internet access on consumer video service choice, we contracted with Opinion Research Corporation (ORC), a national research firm, to include questions on three of its national telephone surveys. The survey contained a set of 14 questions that asked people about their television and Internet use (e g , how they access the Internet from their home) as well as questions designed to gauge the importance of receiving Internet service and video service from the same provider. The questions and response options were read to the respondents. A total of 3,000 adults in the continental United States were interviewed between May 23 and June 2, 2002. The population was taken from the contractor's random-digit-dialing sample of households with telephones, stratified by region.

In order to use the survey results to make estimates about the entire population 18 years and older in the continental United States, ORC weighted the responses to represent the characteristics of all adults in the general public according to four variables: age, gender, geographic region, and race. Because our results are from a sample of the population, the resulting estimates have some sampling errors associated with them. Sampling errors are often presented at a certain confidence interval. The percentage estimates we present in this report have a 95 percent confidence interval of plus or minus 5 percentage points or less. The practical difficulties of conducting any survey may introduce nonsampling errors. As in any survey, differences in the wording of questions, the sources of information available to respondents, or the types of people who do not respond can affect results. We took steps to minimize nonsampling errors. For example, we developed our survey questions with the aid of a survey specialist and pretested the survey questions before submitting them to ORC

Econometric Model

We developed an econometric model to examine the influence of direct broadcast satellite (DBS) companies' provision of local broadcast channels, among other factors, on cable prices and the DBS penetration rates in a large sample of cable franchise areas across the country in 2001. In 2000, we developed a similar econometric model to examine the impact

of DBS penetration rates on cable prices.[19] In this report, we extended the previous econometric model by adding new variables to account for the recent emergence of local broadcast channels via satellite. In particular, this model sought to determine whether and how two categories of key factors affected cable prices and DBS penetration rates: (1) factors that relate to subscribers' demand for cable and DBS services and the companies' costs of providing service and (2) factors that relate to the degree of competition in the market. The availability of local channels via satellite is one variable included in the model that can influence both subscribers' demand for DBS service and the competitiveness of the market. We discussed the development of our model with the Federal Communications Commission (FCC), the Department of Justice (Justice), and several industry trade groups.

There are some important limitations to the interpretation of our model results. Generally, econometric models measure statistical relationships between explanatory factors and the factor to be explained and do not imply causation between these factors. Also, some specific limitations of our model relate to the characteristics of the sample of cable franchise areas chosen by FCC. We performed our statistical analysis on a sample of 722 cable franchise areas included in a yearly survey conducted by FCC. The survey included a sample of "competitive" franchise areas (as defined under statute) and a sample of "noncompetitive" franchise areas, selected within several size classifications (or "strata"). Although FCC conducts the survey annually, different cable franchises report every year because cable franchises are sampled.[20] Since data were not available for every cable franchise for several continuous years, we conducted a cross-sectional analysis, which gave us an observation from 722 different cable franchises at a single point in time. The cross-sectional analysis would not allow us to examine dynamic changes that occur through time, such as the influence of an increasing DBS penetration rate on cable prices. Rather, we were limited to describing the nature of the subscription video market in a single time period, namely 2001. However, certain limited analyses were conducted that incorporated a time-series element.

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[19]See U.S General Accounting Office, *Telecommunications. The Effect of Competition From Satellite Providers on Cable Rates*, GAO/RCED-00-164 (Washington, D C July 18, 2000)

[20]Some cable franchises are selected with a probability of one, therefore continuous yearly data are generally available for these franchises However, in the 2001 survey, only 297 cable franchises were selected with a probability of one

Appendix III contains (1) a complete discussion of the model development, data sources, estimation design, and model results and (2) a table of descriptive statistics for all variables included in the model

Results of Consumer Survey on Video Service Choices

The following results are based on the responses to a random telephone survey of 3,000 adults, age 18 and older, in the continental United States. After each question, the number of respondents (n) is noted. Percentages may not add to 100 percent because of rounding.

Question 1: What method is currently used for viewing on the main television in your home? (n=3,000)

Answer	Percentage of respondents
Over the air, through an antenna	16 0
Cable	62 0
Direct broadcast satellite, such as DirecTV or EchoStar's DISH Network, for all your channels	12 4
Direct broadcast satellite for all channels except local broadcast channels	4 2
Big dish, C-band satellite	1.4
You don't own a television	1 9
Other (Specify)	0 8
Don't know	1 3

[If respondent answered "you don't own a television," "other," or "don't know," the survey was ended for that respondent.]

Question 2: [Only asked of those who answered "over the air," "direct broadcast satellite," or "C-band satellite" in question 1.] Have you considered purchasing cable service for your main television viewing within the past 2 years? (n=1,018)

Answer	Percentage of respondents
Yes	22 7
No	66 5
Cable is not available to me	10 4
Don't know	0 5

Question 3: [Only asked of those who answered "cable" in question 1] Did you begin subscribing to your current cable provider within the past 2 years? (n=1,854)

Answer	Percentage of respondents
Yes	29 9
No	69 2
Don't know	0 9

Question 4: [Only asked of those who answered "yes" to question 3.] What method did you previously use for your main television viewing? (n=555)

Answer	Percentage of respondents
Over the air, through an antenna	32 3
Another cable provider	49 8
A satellite provider	12 4
Other (Specify)	2 7
Don't know	2.8

Question 5: [Only asked of those who answered "yes" to question 2 or question 3.] I am now going to read you a list of reasons that someone may think of when purchasing cable service. For each of these, please tell me if it was a major reason, a minor reason, or not a reason in why you [considered/purchased] cable. Again, please rate each of these as a major reason, a minor reason, or not a reason.[21]

Question 5a: Because your area cable company offered special rates or other promotions, such as free installation or 3 months free. (n=785)

Answer	Percentage of respondents
Major reason	32 5
Minor reason	27 8
Not a reason	39 0
Don't Know	0.7

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[21]Questions 5a through 5j were read in a random order Question 5k was always read as the last question of the set

Question 5b: Because you wanted more channels than you were receiving (n=785)

Answer	Percentage of respondents
Major reason	57 2
Minor reason	19.8
Not a reason	22 7
Don't know	0 3

Question 5c: Because you wanted to purchase special features (like sports packages, pay-per-view, or movie options). (n=785)

Answer	Percentage of respondents
Major reason	27 6
Minor reason	24 9
Not a reason	47 3
Don't know	0 3

Question 5d: Because you heard or saw that the picture and audio quality with cable was better than you were receiving. (n=785)

Answer	Percentage of respondents
Major reason	39.3
Minor reason	22.4
Not a reason	37 4
Don't know	0 9

Question 5e: Because you were interested in receiving high definition television channels. (n=785)

Answer	Percentage of respondents
Major reason	25 4
Minor reason	24 2
Not a reason	49 9
Don't know	0 6

Question 5f: Because you thought that cable was cheaper than satellite service. (n=785)

Answer	Percentage of respondents
Major reason	31 3
Minor reason	22 0
Not a reason	44.7
Don't know	2 0

Question 5g: Because you thought cable offered better customer service quality than you were receiving. (n=785)

Answer	Percentage of respondents
Major reason	30 4
Minor reason	22 8
Not a reason	45 8
Don't know	1 0

Question 5h: Because you were interested in purchasing your Internet service through a cable provider and wanted to purchase television service from the same company. (n=785)

Answer	Percentage of respondents
Major reason	18 6
Minor reason	19 4
Not a reason	61 4
Don't know	0 6

Question 5i: Because you wanted to get both your local broadcast channels and cable channels from the same company. (n=785)

Answer	Percentage of respondents
Major reason	46 9
Minor reason	20 5
Not a reason	31 9
Don't know	0 9

Question 5j: Because family and friends recommended cable. (n=785)

Answer	Percentage of respondents
Major reason	11.6
Minor reason	25.0
Not a reason	62.9
Don't know	0 5

Question 5k: Because cable was the only television option available to you other than over-the-air broadcasting. (n=785)

Answer	Percentage of respondents
Major reason	33 5
Minor reason	20 2
Not a reason	46 0
Don't know	0 3

Question 6: [Only asked of those who answered "over the air," "cable," or "C-band satellite" in question 1.] Have you considered purchasing direct satellite service, such as DirecTV or EchoStar's DISH Network, within the past 2 years? (n=2,375)

Answer	Percentage of respondents
Yes	25 8
No	72 2
Satellite is not available to me	1.3
Don't know	0 7

Question 7: [Only asked of those who answered "direct broadcast satellite" in question 1.] Did you begin subscribing to your current direct satellite service within the past 2 years? (n=497)

Answer	Percentage of respondents
Yes	48 5
No	51 1
Don't know	0.4

Question 8: [Only asked of those who answered "yes" to question 7.] What method did you previously use for your main television viewing? (n=241)

Answer	Percentage of respondents
Over the air, through an antenna	24 2
A cable provider	57 6
Another direct satellite provider	10 7
A big dish, C-band satellite	4.3
Other (Specify)	1.3
Don't know	1 8

Question 9: [Only asked of those who answered "yes" to question 6 or question 7.] I am now going to read you a list of reasons that someone may think of when purchasing satellite service. For each of these, please tell me if it was a major reason, a minor reason, or not a reason in why you [considered/purchased] satellite service. Again, please rate each of these as a major reason, a minor reason, or not a reason.[22]

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[22]Questions 9a through 9j were read in a random order Question 9k was always read as the last question of the set

Question 9a: Because the satellite company offered special rates or other promotions, such as free installation or 3 months free. (n=854)

Answer	Percentage of respondents
Major reason	45 4
Minor reason	27 7
Not a reason	26 3
Don't know	0 6

Question 9b: Because you wanted more channels than you were receiving. (n=854)

Answer	Percentage of respondents
Major reason	61 4
Minor reason	19 7
Not a reason	18 4
Don't know	0 5

Question 9c: Because the satellite company added local broadcast channels, such as ABC or FOX, in your area. (n=854)

Answer	Percentage of respondents
Major reason	37 5
Minor reason	23 2
Not a reason	37.8
Don't know	1 4

Question 9d: Because you wanted to purchase special features (like sports packages, pay-per-view, or movie options). (n=854)

Answer	Percentage of respondents
Major reason	38.8
Minor reason	25.4
Not a reason	35.2
Don't know	0 6

Question 9e: Because you heard or saw that the picture and audio quality
with satellite were better than you were receiving. (n=854)

Answer	Percentage of respondents
Major reason	40 4
Minor reason	25 6
Not a reason	33 1
Don't know	1 0

Question 9f: Because you were interested in receiving high definition
television channels. (n=854)

Answer	Percentage of respondents
Major reason	32.0
Minor reason	23.9
Not a reason	43.0
Don't know	1 2

Question 9g: Because you thought that satellite was cheaper than cable.
(n=854)

Answer	Percentage of respondents
Major reason	46.0
Minor reason	21.9
Not a reason	31.1
Don't know	1 0

Question 9h: Because you thought that satellite offered better customer
service quality than you were receiving. (n=854)

Answer	Percentage of respondents
Major reason	33 9
Minor reason	25 2
Not a reason	39 4
Don't know	1.5

Question 9i: Because you were interested in purchasing your Internet service through a satellite company and wanted to purchase your television service from the same company. (n=854)

Answer	Percentage of respondents
Major reason	11.8
Minor reason	23.0
Not a reason	64 4
Don't know	0.8

Question 9j: Because family and friends recommended satellite. (n=854)

Answer	Percentage of respondents
Major reason	18.6
Minor reason	32 7
Not a reason	48 4
Don't know	0 3

Question 9k: Because satellite was the only television option available to you other than over-the-air broadcasting (n=854)

Answer	Percentage of respondents
Major reason	26 6
Minor reason	16 1
Not a reason	56 7
Don't know	0 7

Question 10: [Only asked of those who answered "yes" to question 6 or question 7.] When you considered purchasing direct satellite service, which service did you consider? (n=854)

Answer	Percentage of respondents
Both DirecTV and EchoStar's DISH Network	17.2
DirecTV only	62 3
EchoStar's DISH Network only	9 0
Don't know	11.6

Question 11: How do you currently access the Internet in your home?   (If you use more than one method, please tell me which one you use most.) (n=2,872)

Answer	Percentage of respondents
Standard phone line modem	46 4
DSL service	4 8
Cable modem service	10 1
Satellite Internet service	0 5
You have a computer, but don't access the Internet	8 5
You don't have a computer	26 6
Other (Specify)	0 5
Don't know	2 6

Question 12: [Not asked of those who answered "cable modem service" in question 11.] Does your area cable provider offer Internet access through a cable modem service? (n=2,583)

Answer	Percentage of respondents
Yes	56.9
No	14 3
Don't have an area cable provider	5 8
Don't know	22 9

Question 13: When thinking about purchasing TV programming, would the availability of cable modem Internet access make you more likely to choose cable service over satellite service? (n=2,872)

Answer	Percentage of respondents
Not more likely	51 4
Slightly more likely	12.9
Moderately more likely	13 7
Much more likely	16 0
Don't know	6 0

Question 14: [Not asked of those who answered "satellite Internet service" in question 11.] Have you considered purchasing Internet access service through a satellite provider? (n=2,857)

Answer	Percentage of respondents
Yes	9 2
No	87 8
This is not available	1 0
Don't know	2 1

GAO Econometric Model

This appendix describes our econometric model of cable-satellite competition. Specifically, we discuss (1) the conceptual development of the model, (2) the data sources used for the model, (3) the merger of various data sources into a single data set, (4) the descriptive statistics for variables included in the model, (5) the estimation methodology and results, and (6) alternative specifications.

Conceptual Development of the Econometric Model

In response to a congressional request, we developed an econometric model to examine the influence of satellite companies' provision of local broadcast channels, along with other factors, on cable prices and DBS penetration rates in a large sample of cable franchise areas in 2001. This request represented a follow-up to a previous report that we issued which analyzed the impact of DBS penetration rates on cable prices.[23] Relying on our previous model, the existing empirical literature, and our assessment of the current subscription video marketplace, we developed a model that included a variety of explanatory variables that were included in our previous model, as well as other models, but that also extended those analyses by adding new variables to account for the recent provision of local broadcast channels by DBS companies as an important factor in competition between cable and DBS companies.

Examination of Competitive Effects in the Subscription Video Market

To examine the influence of the DBS companies' provision of local channels on cable prices and DBS penetration rates, we employed a model that is based on the subscription video market, rather than on the narrower market for cable television.[24] In 2001, the national market share of cable systems (as measured by subscribership) in what we call the subscription video market was about 78 percent, and the share of the DBS providers was about 18 percent. The remaining 4 percent of subscription television households obtained service through other means such as terrestrial wireless systems, satellite master antenna television systems (usually used in apartment buildings or other multiple-dwelling units), open video systems, and large "C-band" home satellite dishes.

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[23]GAO/RCED-00-164

[24]This is consistent with FCC's approach to analyzing the market. See Federal Communications Commission, *Annual Assessment of the Status of Competition in Markets for the Delivery of Video Programming*, CS Docket No 01-129, *Eighth Annual Report*, FCC 01-389 (Washington, D C Jan 14, 2002)

Cable providers and satellite providers can be regarded as "differentiated," not so much because they use different technologies but because the services they provide are perceived as different by subscribers and because these varied providers face different laws and regulations that influence their cost structures as well as the type of product they provide. For example, in 2001, satellite subscribers in only 42 television markets could receive local broadcast signals from either DBS provider. Also, cable companies must pay local franchise fees and are required to provide capacity for public, educational, and government channels. In sum, cable and satellite providers are differentiated in consumers' perception, in their legal context, and in their product offerings.

In our model, cable prices and DBS penetration rates will depend broadly on the demand and cost conditions affecting both the cable and noncable providers of subscription video services. With the passage of the Satellite Home Viewer Improvement Act, DBS providers were granted authority to distribute local broadcast television channels in the broadcast stations' local markets, perhaps allowing DBS providers to compete more fully with cable companies. To measure the influence of local channels, we used a variable that indicates whether local channels were available from both DBS providers in each franchise area.[25]

Specification of Econometric Model of Cable-Satellite Competition

Estimating the influence of DBS companies' provision of local channels on cable prices and DBS penetration rates is complicated by the possibility that the DBS penetration rate in an area is itself determined, in part, by the cable price in that area and that the cable price is determined, in part, by the DBS penetration rate. One statistical method applicable in this situation is to estimate a system of structural equations in which certain variables that may be simultaneously determined are estimated jointly. In our previous report, we estimated a four-equation structural model in which cable prices, the number of cable subscribers, the number of cable

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[25]We also considered a variable that indicates whether either DBS provider offered local broadcast channels. There were seven markets where only one DBS company offered local channels. We discuss the results of this specification in the last section of this appendix

channels, and the DBS penetration rate were jointly determined.[26] We modify this four-equation structural model to incorporate the influence of local channels via satellite on cable prices and DBS penetration rates.

One implication of this estimation technique is that the estimated effects we report for the influence of DBS companies' provision of local channels on cable prices and DBS penetration rates must be interpreted as direct effects on price and penetration. At the same time, there are indirect effects of local channels on cable prices and DBS penetration rates wherein these effects on cable prices and DBS penetration rates work through their effects on other endogenous variables. For instance, a DBS company's provision of local channels may influence a cable operator's decision about the number of channels to include in programming packages, which can, in turn, affect its cable price and the DBS penetration rate. We later present a table with results from reduced-form cable price and DBS penetration rate equations to show how the exogenous variables in the system of equations affect, both directly and indirectly, cable prices and DBS penetration rates.

We estimated the following four-equation structural model of the subscription television market:

- Cable prices are hypothesized to be related to (1) the number of cable channels, (2) the number of cable subscribers, (3) the DBS penetration rate, (4) the DBS companies' provision of local channels in the franchise area, (5) the size of the television market as measured by the number of television households, (6) horizontal concentration, (7) vertical relationships, (8) the presence of a nonsatellite competitor, (9) regulation, (10) average wages, and (11) population density. The cable price variable used in the model is defined as the total monthly rate charged by a cable franchise to the "typical subscriber," including the fees paid for the most commonly purchased programming tier and rented equipment (a converter box and remote control).[27] The

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[26]In previous studies that defined the market more narrowly to be cable television, equations for cable rates, the number of cable subscribers, and the number of cable channels were estimated jointly For example, see Ford, G S and J D Jackson, "Horizontal Concentration and Vertical Integration in Cable Television Industry," *Review of Industrial Organization*, 12(4) (1997), pp. 501-518, and Rubinovitz, R N , "Market Power and Price Increases for Basic Service Since Deregulation," *RAND Journal of Economics*, 24(1) (1993), pp. 1-18.

[27]The cable price does not reflect special introductory monthly rates, such as those offered to current DBS subscribers when they switch to cable service

explanatory variables in the cable price relationship are essentially cost and market structure variables

- <u>Number of cable subscribers</u> is hypothesized to be related to (1) cable prices (per channel), (2) the DBS penetration rate, (3) the DBS companies' provision of local channels in the franchise area, (4) the size of the television market as measured by the number of television households, (5) the number of broadcast channels, (6) urbanization, (7) the age of the cable franchise, (8) the number of homes passed by the cable system, (9) the median income of the local area, and (10) the presence of a nonsatellite competitor. The number of cable subscribers is defined as the number of households in a franchise area that subscribe to the most commonly purchased programming tier. This represents the demand equation for cable services, which depends on rates and other demand-related factors.

- <u>Number of cable channels</u> is hypothesized to be related to (1) the number of cable subscribers, (2) the DBS penetration rate, (3) the DBS companies' provision of local channels in the franchise area, (4) the size of the television market as measured by the number of television households, (5) the median income of the local area, (6) cable system capacity in terms of megahertz, (7) the percentage of multiple-dwelling units, (8) vertical relationships, and (9) the presence of a nonsatellite competitor. The number of cable channels is defined as the number of channels included in the most commonly purchased programming tier. The number of cable channels can be thought of as a measure of cable programming quality and is explained by a number of factors that influence the willingness and ability of cable operators to provide high-quality service and consumers' preference for quality.

- <u>DBS penetration rate in a television market</u> is hypothesized to be related to (1) cable prices (2) the DBS companies' provision of local channels in the franchise area, (3) the size of the television market as measured by the number of television households, (4) the age of the cable franchise, (5) the median income of the local area, (6) cable system capacity in terms of megahertz, (7) a dummy variable for areas outside metropolitan areas, (8) the percentage of multiple-dwelling units, (9) the angle—or elevation—at which a satellite dish must be fixed to receive a satellite signal in that area, and (10) the presence of a nonsatellite competitor. The DBS penetration rate variable is defined as the number of DBS subscribers in a franchise area expressed as a proportion of the total number of housing units in the area. As hypothesized, the DBS

penetration rate is expected to depend on the prices set by the cable provider as well as on the demand, cost, and regulatory conditions in the subscription video market that directly affect DBS.

Many of the explanatory variables appeared in our 2000 report as well as in previous studies of cable prices prepared by others.[28] The explanatory variables included in these studies fall into two general categories: (1) demand and cost factors and (2) market structure and regulatory conditions. Table 1 presents the expected effects of all the explanatory variables in the structural model on cable prices and DBS penetration rates.

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[28]For example, see Goolsbee, A and A. Petrin, *The Consumer Gains from Direct Broadcast Satellite and the Competition with Cable TV* (Feb 26, 2002), Crandall, R. W. and H. Furchtgott-Roth, *Cable TV Regulation or Competition?* (Washington, D C . Brookings Institution, 1996), Emmons III, W M and R A. Prager, "The Effects of Market Structure and Ownership on Prices and Service Offerings in the U.S Cable Television Industry," *RAND Journal of Economics*, 28(4) (Winter 1997), pp 732-750, Ford and Jackson (1997); Mayo, J W and Y Otsuka, "Demand, Pricing, and Regulation. Evidence from the Cable TV Industry," *RAND Journal of Economics*, 22(3) (1991), pp. 396-410; and Rubinovitz (1993)

Table 1: Expected Effects of All Explanatory Variables on Cable Prices and DBS Penetration Rates

Explanatory variable	Definition of variable	Included in previous GAO report	Expected effect on cable prices	Expected effect on DBS penetration rates
Cable price	The monthly rate charged for the Basic Service Tier, Cable Programming Service Tier (the most commonly purchased tier), and rental of a converter box and remote control	Yes	Not applicable	We expect that higher cable prices should encourage more customers to choose DBS service instead of cable service, thereby increasing the DBS penetration rate.
Number of cable subscribers	The number of subscribers to the Basic Service Tier and Cable Programming Service Tier	Yes	Costs per subscriber of providing cable services can increase or decrease with the number of subscribers, depending on scale economies.	If cable and DBS service are substitute services, we expect a lower DBS penetration rate where there are more cable subscribers.
Number of cable channels	The number of channels provided with the Basic Service Tier and Cable Programming Service Tier	Yes	Consumers should be willing to pay more for a greater number of channels Also, costs should be greater for the cable operator to provide more channels	In areas where cable companies offer more channels (a measure of quality), we expect lower DBS penetration rates
DBS penetration rate	The fraction of housing units in a cable franchise area that have satellite service	Yes	We expect the presence of DBS to restrain cable prices if cable and satellite were close substitutes in 2001	Not applicable.
DBS provision of local channels	A binary variable that equals 1 if both DBS providers offer local channels in the cable franchise area	No	If local channels make DBS service a closer substitute for cable service, we expect the presence of local channels to be associated with lower cable prices.	If local channels make DBS service a more attractive alternative for subscribers, we expect the presence of local channels to be associated with higher DBS penetration rates.
Homes passed by cable system	The number of homes passed by the cable sysem that serves the franchise area, including homes outside of the franchise area.	Yes	As the number of homes passed increases, the costs of operation could increase or decline depending on the scale economies.	DBS providers will be more or less competitive with cable franchises, depending on the cable companies' costs of operation.
Age of cable franchise	2001 minus the year that the cable franchise began operation	Yes	Subscribers could have a higher demand in franchise areas with older cable franchises because they are more likely to be aware of the availability and quality of the cable system. Therefore, cable prices could be higher.	Because consumers are more likely to be aware of the availability and quality of cable, we expect lower DBS penetration rates in areas where the cable franchise is older

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Explanatory variable	Definition of variable	Included in previous GAO report	Expected effect on cable prices	Expected effect on DBS penetration rates
Cable system megahertz	The capacity, measured in megahertz, of the cable system that serves the franchise area	Yes	Higher-megahertz systems may enable the provider to offer more channels and to bundle services, such as video, voice, and broadband Internet access, together. This could increase demand for cable, leading to higher prices Alternatively, cable prices may be discounted to attract consumers to the other (new) services	We expect more capacity to be associated with a lower DBS penetration rate if cable providers are able to offer more channels and bundled services, such as telephony and broadband Internet services
Horizontal concentration	A binary variable that equals 1 if the franchise area is served by 1 of the 10 largest national multiple system operators (MSO)	Yes	If large MSOs have some cost advantages, rates could be lower; if MSO ownership imposes a competitive disadvantage to potential entrants, cable prices could be higher	If MSO ownership imposes a competitive disadvantage on DBS providers, DBS penetration rates could be lower.
Vertical relationships	A binary variable that equals 1 if the cable operator is affiliated with an MSO that has an ownership interest in a national or regional video programming service.	Yes	A vertical relationship could lower cable system costs if programming costs are reduced or efficiencies are gained, but vertical relationships could signify market power that would tend to lead to higher cable prices.	If a vertical relationship imposes a competitive disadvantage on DBS providers, DBS penetration rates could be lower.
Presence of nonsatellite competitor	A binary variable that equals 1 if a second wireline company provides cable service (including, for example, a local exchange telephone carrier offering video services) in the franchise area	Yes	Cable prices should be lower where a nonsatellite competitor provides service	The presence of a nonsatellite competitor increases the number of firms providing multichannel video service, possibly implying a lower DBS penetration rate.
Regulation	A binary variable that equals 1 if the cable franchise is subject to regulation of the rate charged for the Basic Service Tier.	Yes	Regulation may be associated with lower cable prices when compared with prices that would prevail under profit-maximizing pricing by monopoly cable systems However, cable prices could be higher under regulation if the unregulated cable systems were more competitive	DBS penetration rates could be higher or lower, depending on how regulation influences the competitiveness of the cable company.

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Explanatory variable	Definition of variable	Included in previous GAO report	Expected effect on cable prices	Expected effect on DBS penetration rates
Television market size	The number of television households in the market	No	In larger markets, more alternative forms of entertainment compete with cable, which should lead to lower cable prices	In larger markets, more alternative forms of entertainment compete with DBS, which should lead to lower DBS penetration rates
Number of local broadcast channels	The number of over-the-air broadcast stations in the television market	Yes	Consumers would pay more for a greater number of broadcast channels on the cable system Alternatively, over-the-air television could be more competitive with cable in areas where there are many stations	Over-the-air television could be more competitive with DBS in areas where there are many stations
Average weekly wage	The average weekly wage for telecommunications equipment installers and repairers in the state where the cable franchise is located	Yes	Areas with higher average wages should have higher costs of operation, which would make cable prices higher	Cable franchises in areas with relatively high average wages would be less competitive with national DBS providers
Median household income	The median household income in the franchise area	Yes	As consumers' incomes rise, demand for cable services should increase, which would increase cable prices.	As consumers' incomes rise, demand for DBS service should increase, implying a greater DBS penetration rate.
Nonmetropolitan area	A binary variable that equals 1 if the franchise area is outside of a metropolitan statistical area (MSA)	Yes	We expect the competitive impact of DBS on cable prices to be stronger in franchise areas that lie outside of MSAs	We expect nonmetropolitan status to be associated with higher DBS penetration rates if DBS is a closer substitute for cable in nonmetropolitan areas.
Population density	The ratio of population to square miles in the franchise area	No	Because more customers can be served per mile of cable, areas with higher population density should have lower costs of operation and therefore lower cable prices.	Cable franchises in more densely populated areas would be more competitive with DBS providers because of possible lower costs and line-of-sight problems for DBS subscribers.
Urbanization	The percentage of the county's population that is classified as urban by the Census Bureau.	Yes	Because consumers in more urban settings have many alternative forms of entertainment competing with cable, their demand for cable services would be lower, which would lead to lower cable prices.	We expect lower demand for DBS service in urban areas because consumers have alternative forms of entertainment and are less likely to have the necessary line-of-sight to the satellite because of obstructions.

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Explanatory variable	Definition of variable	Included in previous GAO report	Expected effect on cable prices	Expected effect on DBS penetration rates
Percentage of multiple-dwelling units	The percentage of housing units accounted for by structures with five or more housing units	Yes	Where there are more multiple-dwelling units, the market has been found to be more naturally competitive because cable systems may face greater actual or potential competition, which would lead to lower cable prices.	We expect lower DBS penetration rates where there are more multiple-dwelling units because consumers' line-of-sight is more likely to be blocked and consumers may face more restrictions on where they can mount the dish at their residence
Dish angle or elevation	The angle relative to the ground that a DBS subscriber must mount the satellite dish to "see" the satellite. A more vertical mounting is defined to be a lower "angle"	No	If satellite dishes must be mounted in a more vertical position, we expect that DBS providers will be less competitive with cable companies	In markets in which a satellite dish must be set in a more vertical position, we expect lower DBS penetration because of the greater likelihood that obstacles would block the line-of-sight to the satellite.

Source GAO (2002)

Data Sources Used for the Econometric Model

We required several data elements to build the data set used to estimate this model. The following is a list of our primary data sources:

- We obtained data on cable prices and service characteristics from a 2001 survey of cable franchises that FCC conducted as part of its mandate to report annually on cable prices. FCC's survey asked a sample of cable franchises to provide information about a variety of items pertaining to cable prices, service offerings, subscribership, franchise area reach, franchise ownership, and system capacity. We used the survey to define measures of each franchise area's cable prices, number of subscribers, and number of cable channels as described above. In addition, we used the survey to define variables measuring (1) system megahertz (the capacity of the cable system in megahertz), (2) homes passed by the cable system serving the franchise area and perhaps other franchises in the same area, (3) competitive status—a dummy variable equal to 1 if the franchise faced "nonsatellite" competition from an unaffiliated subscription video company (or "overbuilder") or from a local telephone company, (4) regulation—a dummy variable equal to 1 if the franchise is subject to rate regulation of its Basic Service Tier, and (5) horizontal

concentration—a dummy variable equal to 1 if the franchise is affiliated with 1 of the 10 largest MSOs.

- From *SkyREPORT,* we obtained an estimate of DBS subscriber counts as of year-end 2001 for each zip code in the United States We used this information to calculate the number of DBS subscribers in a cable franchise area, which, when used in conjunction with the number of housing units, was used to define the DBS penetration rate.

- We used the most recent data from the U.S. Census Bureau to obtain the following demographic information for each franchise area: median household income, proportions of urban and rural populations, housing units accounted for by structures with more than five units (multiple-dwelling units), population density, and nonmetropolitan statistical areas.

- For average wage, we used year 2000 state estimates for Telecommunications Equipment Installers and Repairers from the Bureau of Labor Statistics' (BLS) Occupation and Employment Statistics Survey.

- We used data from BIA MEDIA AccessPro to determine the number of broadcast television stations in each television market.

- To define the dummy variable indicator of vertical integration, we used information on the corporate affiliations of the franchise operators provided in FCC's survey. We used this information in conjunction with industrywide information on vertical relationships between cable operators and suppliers of program content gathered by FCC in its 2001 annual video report.

- We used information from the National Association of Broadcasters to identify in which television markets local channels were available from both DBS companies.

- From Nielsen Media Research, we acquired information to determine the number of television households in each designated market area (DMA) and to determine in which DMA each cable franchise was located.

- On the basis of a zip code associated with each cable franchise, we were able to determine the necessary satellite dish elevation for each cable

franchise area from information available on the Web pages of DirecTV and EchoStar.

Merging Various Data Sources into a Single Data Set

The level of observation in our model is a cable franchise.[29] Many of the variables we used to estimate our model, such as each cable franchise's price, came directly from FCC's survey of franchises. However, we also created variables for each franchise from information derived from other sources. For example, median income and the extent of multiple-dwelling units were obtained from Census data, and the number of DBS subscribers was provided by *SkyREPORT.*

The assignment of these variables to each franchise required identifying the geographic extent of each franchise area because Census and DBS data are reported within geographic definitions that differ from cable franchise areas. Census data can be obtained at several geographic levels, including communities or counties. Additionally, some information—most notably DBS subscriber counts—is at a zip code level. FCC's survey and other FCC data on cable franchises contain information on the franchise community name, type (such as city or town), and county, which can be used to link franchises to Census areas. One complicating factor in using community names to assign non-survey-derived information to each franchise is that some cable franchises are in areas, such as unnamed, unincorporated areas, that do not correspond to geographic areas for which Census or other data are readily available. Another complicating factor is that FCC's 2001 survey did not contain information on the zip codes served by particular franchise areas.

We first attempted to determine the geographic area associated with each cable franchise. Our general approach was to combine each franchise's community name field with an indicator of community type, such as city or town, and then match these names to census place or, alternatively, county

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[29] We define a cable franchise in terms of its Community Unit Identification (CUID) number.

subdivision[30] (minor civil division) files. Since many of the franchises in our sample correspond to recognizable local entities—such as cities, towns, and townships—we were able to make the link directly to Census data sources and assign demographic and other census data gathered at the level of the associated community. Of the 722 franchises used in the model, 442 were linked to census place files, and 126 were linked to census county subdivision files. For other franchises, however, the link to Census records was not as direct. For franchises in unincorporated, unnamed areas and those whose franchise areas represent a section of the associated community (which occurs in some large cities),[31] we acquired additional information on the geographic boundaries of the franchise areas.[32] For purposes of assigning demographic and other census data to each of these franchises, we identified a key zip code that we used to link to census data organized at the zip code level. Of the 722 franchises used in the model, 28 were in large cities with multiple franchises, 94 were in unincorporated areas of counties for which we obtained more specific boundary information, and 32 were in unincorporated areas for which we did not obtain more specific boundary information.

The satellite subscriber information we obtained was organized by zip code. In order to match these counts to franchises, we determined the zip code or zip codes associated with each franchise. Because zip codes often do not share boundaries with other geographies, one zip code can be

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[30]Places consist of what are known as census-designated places and places that are incorporated according to the laws of their respective states. Generally, incorporated places can be thought of as cities, boroughs, towns, townships, and villages. However, towns and townships in some states are not considered places in terms of census reporting, even though they might both serve some local government purpose and have large populations. Census data for many franchise areas designated as towns in FCC's master file of franchises are found in the county subdivisions file rather than the places file.

[31]Many large cities, such as New York City, Los Angeles, and Chicago, have multiple cable franchise areas

[32]For those jurisdictions for which there were multiple franchises, including counties with franchises in unincorporated unnamed areas, we attempted to define more precise geographical boundaries for each franchise. Specifically, we contacted local government offices responsible for cable franchise oversight and received maps or other descriptive information linking the specific franchise areas to zip codes, census tracts, local government districts, or some other boundary information. When local governments did not directly provide zip code or census tract information, we used the information they did provide in conjunction with zip code overlay maps to assign zip codes to the franchise areas. For some franchises in unincorporated unnamed areas, we were unable to approximate the franchise area with any more geographic specificity than the unincorporated portion of the county

associated with more than one cable franchise area. Also, many franchises, particularly larger ones, span many zip codes. Therefore, we needed to identify the zip code or codes in each franchise area as well as the degree to which each of those zip codes is contained in each franchise area to calculate the degree of satellite penetration for each franchise. We accomplished this by using software designed to relate various levels of census geography to one another.[33] For most franchise areas—that is, those that correspond to census places, county subdivisions, or entire counties as well as some of those franchises in multiple-franchise jurisdictions—we were able to use this software to relate census places, county subdivisions, and in some cases, census tracts or whole counties, directly to the zip codes that corresponded to those areas (places, etc) and to calculate the share of each zip code's population according to the 2000 Census that was contained in that area. We used these population shares to allocate shares of each zip code's total DBS subscribers to the relevant franchise area.[34] For some franchise areas in unincorporated areas, we used the zip code or codes we identified as part of our investigation of the geographic extent of these franchises, and we used the software to estimate the proportion of the population in those zip codes living in unincorporated areas and to allocate DBS subscribers on the basis of these population proportions.[35]

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[33]Specifically, we used the MABLE/Geocorr correspondence engine (http //mcdc2 missouri edu/websas/geocorr2k html). MABLE is an acronym for Master Area Block Level Equivalency file

[34]As an illustration, assume that we had a cable franchise area in the town of Anytown, which the MABLE software identifies is served by zip codes 12345 and 12346. Assume further that zip code 12345 had a population of 10,000 people in 2000, of which 8,000 were in Anytown proper and 2,000 were in the surrounding unincorporated area, and zip code 12346 had a population of 12,000 people of which 6,000 were in Anytown In this case, 80 percent of the 12345 zip code and 50 percent of the 12346 populations are associated with Anytown, so that our approach would assign 80 percent of the satellite subscribers in zip code 12345 and 50 percent of those in 12346 to the cable franchise in the town of Anytown Because we defined the DBS penetration rate as the number of subscribers divided by the number of housing units, our approach would divide this estimate of the number of DBS subscribers in Anytown by the number of housing units reported in the 2000 Census for the town of Anytown

[35]As another illustration, suppose there is a cable franchise in an unincorporated area that we identified as being near the town of Anytown. In this case, we would treat the franchise area as being the unincorporated portion of zip code 12345 In the case where there is only one zip code involved, we would approximate the DBS penetration rate for this franchise as the number of DBS subscribers in the zip code divided by the number of housing units in the zip code as reported in the 2000 Census In other cases where more than one zip code is involved, we would approximate the DBS penetration rate on the basis of the shares in all of the identified zip codes

For some other franchise areas in unincorporated areas, we approximated DBS penetration using population proportions in the unincorporated portions of all zip codes in the relevant counties.

We assigned other information to each franchise on the basis of the franchise's county, state, or the key zip code that we identified. Wage data from BLS were assigned at the state level; nonmetropolitan status, percentage of urban population, and the Nielsen television market of each franchise were assigned at the county level.[36] As part of the process used to match zip codes to franchises, we defined a key zip code for each franchise as that zip code with the largest franchise area population. We used this zip code to assign dish elevation for each franchise.

Descriptive Statistics for Variables Included in the Econometric Model

Table 2 provides basic statistical information on all of the variables included in the cable–satellite competition model. We calculated these statistics using all 722 observations in our data set.

Table 2: Descriptive Statistics

Variable	Mean	Standard deviation	Minimum value	Maximum value
Cable price (dollars per month)	35 89	5 31	14.00	47 84
Number of cable subscribers	21,008 5	43,256 2	4.0	302,964 0
Number of cable channels	58 0	14 1	10 0	99 0
DBS penetration rate (percentage)	15 8	11.2	1 6	63 6
DBS provision of local channels	0 51	0 50	0 00	1 00
Homes passed by cable system	177,114 4	233,678.7	30 0	1,260,734 0
Age of cable franchise (years)	23 9	9.6	2.0	50 0
Cable system megahertz	637 6	172 3	216 0	870 0
Horizontal concentration	0 83	0.37	0 00	1 00
Vertical relationships	0 54	0 50	0 00	1.00

[36]In the Nielsen data, some counties are split between different television markets In cases where a franchise's county was not uniquely placed in one television market, we used additional information on zip codes to assign the franchise to a television market.

(Continued From Previous Page)

Variable	Mean	Standard deviation	Minimum value	Maximum value
Presence of nonsatellite competitor	0 14	0 35	0 00	1 00
Regulation	0 35	0 48	0 00	1 00
Television market size (households in thousands)	1,432 1	1,655 3	50 0	7,301 0
Number of local broadcast channels	11 9	5 7	1.0	25 0
Average weekly wages (dollars)	788 38	101.80	575 38	1,045 58
Median household income (dollars in thousands)	43 7	16 1	13 5	140 0
Nonmetropolitan area	0 26	0 44	0 00	1 00
Population density	2,843 9	7,066.2	2.3	87,139 8
Urbanization (percentage)	72.8	28.4	0 0	100 0
Percentage of multiple-dwelling units	14 28	13 57	0.00	98 12
Dish angle or elevation (degrees)	40 3	6 6	27 2	57 3

Source GAO (2002)

Estimation Methodology and Results

We employed the Three-Stage Least Squares (3SLS) method to estimate our model.[37] Table 3 includes the estimation results for each of the four structural equations. All of the variables, except dummy variables,[38] are expressed in natural logarithmic form.[39] This means that coefficients can be interpreted as "elasticities"—the percentage change in the value of the dependent variable associated with a 1 percent change in the value of an independent, or explanatory, variable The coefficients on the dummy variables are elasticities in decimal form. Most of our results are consistent

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[37]We preferred the 3SLS to Two-Stage Least Squares (2SLS) because the 3SLS accounts for the contemporaneous relationships among cable rates, cable subscribers, cable channels, and DBS penetration by using all available information. Also, we assumed that price per channel in the subscriber equation is exogenous because cable providers simultaneously decide how many channels to provide and what to charge for a package of channels, rather than deciding how much to charge for each channel.

[38]A dummy variable takes a value of 1 if a certain characteristic is present and a value of 0 otherwise

[39]The dummy variables in the model include the following· horizontal concentration of cable systems, vertical relationship, regulation, presence of nonsatellite competitor, DBS provision of local channels, and nonmetropolitan area. Also, because the natural log of 0 is undefined, we added 1 to the observed value of any continuous variable that can take the value of 0

with the economic reasoning that underlies our model as well as with the results from several previous studies, including our 2000 report.

Table 3: 3SLS Model Results

Variable	Cable prices equation	Cable subscribers equation	Cable channels equation	DBS penetration equation
Cable price				-0 2335 [0 6076]
Cable price per channel		-2.1239 [0 0001][a]		
Number of cable subscribers	0 0166 [0 0816][c]		0 0544 [0.0001][a]	
Number of cable channels	0 2030 [0 0001][a]			
DBS penetration rate	-0 0340 [0 2060]	-2.0759 [0 0001][a]	-0 0245 [0 4237]	
DBS provision of local channels	0 0002 [0 9930]	0 3175 [0.1753]	0 0567 [0 0240][b]	0 2772 [0.0001][a]
Homes passed by cable system		0 2211 [0.0001][a]		
Age of cable franchise		0 3870 [0.0052][a]		-0.1253 [0 0062][a]
Cable system megahertz			0 5073 [0 0001][a]	-0.3134 [0 0014][a]
Horizontal concentration	0 0661 [0.0001][a]			
Vertical relationships	-0 0051 [0.6753]		-0 0399 [0 0116][b]	
Presence of nonsatellite competitor	-0 1837 [0.0001][a]	-1.4497 [0 0001][a]	0 0221 [0.3852]	-0.4989 [0 0001][a]
Regulation	0 0008 [0.9564]			
Television market size	0 0085 [0 3074]	-0.2599 [0 0887][c]	-0 0060 [0 5989]	-0.1025 [0 0018][a]
Number of local broadcast channels		0 6181 [0 0050][a]		
Average weekly wages	0 0033 [0.9408]			
Median household income		-0 5452 [0 0100][a]	0 0788 [0.0005][a]	0.1278 [0.0404][b]

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Variable	Cable prices equation	Cable subscribers equation	Cable channels equation	DBS penetration equation
Nonmetropolitan area				0.4555 [0 0001]ᵃ
Population density	-0 0098 [0.0819]ᶜ			
Urbanization		0.0817 [0 2982]		
Percentage of multiple-dwelling units			-0 0148 [0 1555]	-0 2286 [0 0001]ᵃ
Dish angle or elevation				0.5883 [0 0001]ᵃ
Intercept	2.6627 [0 0001]ᵃ	14.6489 [0.0001]ᵃ	-0 3877 [0.2350]	3 2390 [0 0180]ᵇ
Sample size	722	722	722	722

Notes

System-weighted R-square 0 63

P-values are in brackets

ᵃSignificance at the 1 percent level

ᵇSignificance at the 5 percent level

ᶜSignificance at the 10 percent level

Source GAO (2002)

We found that DBS companies' provision of local channels is associated with significantly higher DBS penetration rates. As shown in table 3, our model results indicate that in cable franchise areas where local channels are available from both DBS providers, the DBS penetration rate is approximately 32 percent higher than in areas where local channels are not available via satellite [40] This finding suggests that in areas where local channels are available from both DBS providers, consumers are more likely to subscribe to DBS service, and therefore DBS appears to be more able to compete effectively for subscribers than in areas where local channels are not available from both DBS providers. Several additional factors also influence the DBS penetration rate. Our model results indicate that the DBS penetration rate is greater in nonmetropolitan areas and in cable

[40]For dummy variables (those variables that can take a value of 0 or 1 depending on the presence of a condition (e g , DBS providers offering local broadcast channels)), we report the percentage change arising from a discrete change from 0 to 1 We calculated this percentage change as [exp(parameter estimate)-1] times 100

franchise areas that are outside the largest television markets, as measured by the number of television households in the market. These two factors can be associated with the historical development of satellite service, which had been marketed for many years in more rural areas. Additionally, the DBS penetration rate is higher in areas that require a relatively higher angle or elevation at which the satellite dish is mounted and is lower in areas where there are more multiple-dwelling units. These two factors can be associated with the need of DBS satellite dishes to "see" the satellite: a dish aimed more toward the horizon (as opposed to being aimed higher in the sky) is more likely to be blocked by a building or foliage and people in multiple-dwelling units often have fewer available locations to mount their dish.

We did not find that DBS companies' provision of local broadcast channels is associated with lower cable prices. In table 3, the estimate for this variable is not statistically significant, and we therefore cannot reject the hypothesis that provision of local channels has no impact on cable prices. However, we found that cable prices were approximately 17 percent lower in areas where a second cable company—known as an overbuilder—provides service Additionally, cable prices were higher when the cable company was affiliated with 1 of the 10 largest MSOs. This result indicates that horizontal concentration could be associated with higher cable system prices. Finally, cable prices are higher in areas where the cable company provides more channels, indicating that consumers generally are willing to pay for additional channels and that providing additional channels raises a cable company's costs.

We also found several interesting results in the cable subscriber and cable channel equations In the cable subscribers' equation, we obtained an estimate of the price elasticity of demand for cable services that was lower (in absolute value) than the estimate in our previous report.[41] In the cable channels equation, our model results indicate that local service is associated with improved cable quality, as represented by an increase in the number of channels provided to subscribers. In areas where both DBS companies provide local channels, we found that cable companies offer subscribers approximately 6 percent more channels. This result indicates that cable companies are responding to DBS provision of local channels by

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[41]The price elasticity of demand is estimated to be –2 12, which is elastic, this means that a 1 percent decrease in cable rates results in a 2 12 percent increase in the quantity demanded of cable In our previous study, we found the price elasticity of demand to be –3 22

improving their quality, as reflected by the greater number of channels.
Also, cable franchises offered fewer channels (approximately 4 percent
fewer) when the company was vertically integrated with a programming
network.

Finally, we present reduced-form cable price and DBS penetration
equations (see table 4) in which the exogenous variables in the system are
included to show the net effects on cable prices and DBS penetration rates
of the exogenous variables. In the reduced-form equation, the estimates for
local broadcast service include both the direct effects—as measured in the
3SLS system of structural equations—and indirect effects. Consistent with
the 3SLS system, local channels are associated with significantly higher
DBS penetration rates. Where local channels are offered by both DBS
providers, DBS penetration rates are approximately 33 percent higher than
in areas where local channels are not available. Also, DBS penetration rates
are higher in nonmetropolitan areas, smaller television markets, and places
where the dish elevation is at a greater angle. Again, we cannot reject the
hypothesis that provision of local channels via satellite has no impact on
cable prices. But cable prices are approximately 15 percent lower in
franchise areas where a second cable company provides service, while
prices are approximately 6 percent higher when the cable company is
affiliated with 1 of the 10 largest MSOs.

Table 4: Regression Estimates of Reduced-Form Cable prices and DBS Penetration Equations

Variable	Cable prices equation	DBS penetration equation
DBS provision of local channels	-0 0118 [0 5011]	0.2827 [0 0001][a]
Homes passed by cable system	0 0190 [0.0001][a]	-0 0515 [0 0001][a]
Age of cable franchise	0 0368 [0.0012][a]	-0 1144 [0.0046][a]
Cable system megahertz	0 1321 [0 0001][a]	-0 3025 [0 0001][a]
Horizontal concentration	0 0589 [0 0005][a]	0.2493 [0 0001][a]
Vertical relationships	-0.0293 [0 0192][b]	-0.0718 [0 1066]

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Variable	Cable prices equation	DBS penetration equation
Presence of nonsatellite competitor	-0 1613 [0 0001][a]	-0 4329 [0 0001][a]
Regulation	-0.0020 [0.8610]	-0 0784 [0.0574][c]
Television market size	0 0230 [0 0661][c]	-0 1274 [0 0043][a]
Number of local broadcast channels	-0 0079 [0 6928]	0.1823 [0 0103][b]
Average weekly wages	-0 0004 [0 9931]	0 0106 [0 9535]
Median household income	-0.0036 [0 8407]	0.1646 [0.0096][a]
Nonmetropolitan area	-0.0157 [0 3294]	0 3090 [0 0001][a]
Population density	-0.0068 [0 1473]	-0 0973 [0 0001][a]
Urbanization	0 0069 [0 3246]	-0 0680 [0.0068][a]
Percentage of multiple-dwelling units	0 0079 [0 1951]	-0 1095 [0.0001][a]
Dish angle or elevation	-0 0329 [0.3917]	0 9525 [0.0001][a]
Intercept	2.4292 [0.0001][a]	1.3639 [0.4397]
Sample size	722	722

Notes

Adjusted R-square 0 40 for price equation and 0 57 for DBS penetration equation

P-values are in brackets

[a]Significance at the 1 percent level

[b]Significance at the 5 percent level

[c]Significance at the 10 percent level

Source GAO (2002)

Alternative Specifications

We considered an alternative specification under which we expanded the definition of local channels to include markets where only one DBS provider offered local channels. In 2001, there were seven markets where only one DBS provider, but not both, offered local channels.[42] By expanding our definition of local channels to include markets where either DBS company offered local channels, our data set contained an additional 35 observations (4 9 percent of all observations) defined to have local channels. The results are generally consistent with our primary specification. In both the 3SLS system of structural equations and the reduced-form equation, DBS provision of local channels is associated with significantly higher DBS penetration rates. Further, the estimate for the local channels variable is not statistically significant in the cable price equation, and we therefore cannot reject the hypothesis that provision of local channels has no impact on cable prices.

We considered another alternative specification using 3 years of cable rate and channel data in a single-equation specification. As part of its annual survey, FCC requested that cable companies report their cable rates and number of channels provided for 1999 to 2001. Using these data, we regressed cable rates on the number of cable channels provided, dummy variables for DBS provision of local broadcast channels (on the basis of the amount of time the service was available), and year and cross-section (i.e., cable franchise) dummy variables. In this panel model, we found that DBS provision of local broadcast channels was associated with higher cable rates. Because we lacked DBS penetration rate data for the 3-year period, we were unable to examine the impact of local channels on DBS penetration rates.

[42]These television markets were Albuquerque, Baltimore, Columbus, Greensboro, Memphis, Milwaukee, and West Palm Beach

Comments from the Federal Communications Commission

FEDERAL COMMUNICATIONS COMMISSION
Washington, D C 20554

OFFICE OF
MANAGING DIRECTOR

October 2, 2002
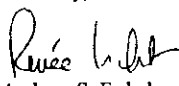
Mr Peter Guerrero
Director
Physical Infrastructure Issues
U S General Accounting Office
Washington, DC 20548

Dear Mr Guerrero

Thank you for offering the Commission the opportunity to comment on GAO's draft
report <u>TELECOMMUNICATIONS Issues in Providing Cable and Satellite Television</u>
(GAO-03-130)

Commission staff have reviewed the draft report To the extent the Report describes the
cable and DBS industries and presents industry statistics, there is nothing in the Report
that is inconsistent with the information gathered by the Commission through a variety of
rulemaking proceedings and research projects Because the Commission's review of the
proposed merger of EchoStar and DirecTV is pending, it would not be appropriate for
Commission staff to comment on the draft report beyond providing the technical edits
that we have already submitted

Sincerely,

Andrew S Fishel
Managing Director

Comments from the Department of Justice

DEPARTMENT OF JUSTICE
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OCT 3   2002

Mr Peter Guerrero
Director, Physical Infrastructure Issues
United States General Accounting Office

Dear Mr Guerrero

     Thank you for providing us with a draft of the GAO report entitled, "Issues in Providing Cable and Satellite Television " Because the proposed acquisition of DirecTV by Echostar Communications Corporation is currently under review by the Antitrust Division, and your report touches on issues directly relevant to our investigation, we decline the offer to comment on your report at this time

                           Sincerely,

                           Charles A James

GAO Contacts and Staff Acknowledgments

GAO Contacts

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Staff Acknowledgments

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